WILDERNESS EVALUATION

Alpine Lakes Adjacent - 617037

54,939 acres

OVERVIEW

History

This area was inventoried under the Alpine Lakes Area Land Management Plan 1981 and includes fragments of land located between the Alpine Lakes Wilderness boundary and roaded development. This area includes land inventoried but not considered for wilderness as part of the Washington State Wilderness Act of 1984. The area was identified as an inventoried roadless area in the 1990 Wenatchee Forest Plan.

The 2006 inventory removed approximately 9,321 acres from previous inventory due to nonconforming uses such as road construction and logging; 4,426 acres were added to the previous inventory as they meet the criteria for a potential wilderness area (PWA) as described in Forest Service Handbook (FSH) 1909.12, Chapter 70. The Northwest Forest Plan allocations include managed late successional areas, late successional reserves, matrix, and riparian reserves. Table 1 depicts the 1990 Land and Resource Management Plan direction for the lands in the 2006 inventory.

Table 1--Management Area Percentages (rounded)

Wenatchee National Forest								
FS-Pen	**GF**	**RE2A**	**RE3**	**SI1**	**SI2**	**ST1**	**ST2**	**WS1**
3%	18%	1%	50%	20%	1%	7%	4%	3%

Location and Access

This potential wilderness area borders the Alpine Lakes Wilderness. Portions of this PWA are located in both Kittitas and Chelan Counties on the Wenatchee River and Cle Elum Ranger Districts. Access is provided by three major highways including I-90, U.S. 97, and U.S. 2, and by a network of county roads and National Forest System roads. National Forest System trails provide access through most of the area.

Geography and Topography

The Alpine Lakes Adjacent PWA includes seventeen separate areas that surround the Alpine Lakes Wilderness. Elevation of the Alpine Lakes Adjacent Area ranges from approximately 1200 feet in the vicinity of Leavenworth to 7000 feet on the higher peaks and ridges. The topography of this potential wilderness area is generally very steep, with typical elevation changes on the order of 2,500 feet per mile. Annual precipitation in this area ranges from approximately 20 inches per year in the eastern portions to 100 inches per year near the crest of the Cascade Range. A majority of the precipitation is delivered as snow.

Current Uses

The major activities in this area include hunting, hiking, mountain biking, dispersed camping, and mountain climbing. There are approximately 40 miles of trail in the PWA. All trails are closed to motorized use. Winter use includes snowmobiling, backcountry skiing, and snowshoeing. Portions of the Alpine Lakes Adjacent that are open to snowmobiles contribute to wilderness incursions.

Appearance and Surroundings

The area has a moderate visual variety of landform, vegetation, rock form, and lakes and streams. The area is characterized by steep side slopes and rolling ridge lines. Moderate to heavily timbered stands are found along stream bottoms and north aspects. The area is primarily viewed as foreground and middle ground from National Forest System trails and roads. Major highways provide middle ground views.

Key Attractions

There are several areas that have striking scenic qualities such as Tumwater Canyon, Icicle Canyon, and Icicle Ridge. The trail systems within this area receive moderate to heavy use. A significant increase in use has occurred in bouldering activities in Icicle Canyon and Tumwater Canyon. Much of the area receives heavy winter use from skiers and snowshoers, with some snowmobile use.

CAPABILITY FOR WILDERNESS

Level of natural and undeveloped environment

Most of this area is in a natural condition, away from human sights and sounds; however, there are a number of exceptions.

Helicopter salvage logging occurred in this area in the lower Icicle drainage following the 1994 Rat/Hatchery fire. Stumps remain visible from the logging, but not from the trail corridors, and thus are not considered substantially noticeable. A marked Nordic trail system exists on McCue Ridge, which is operated by the Scottish Lakes High Camp, a nearby backcountry ski resort operated from private land. Power lines and access roads abut the area along the Highway 2 corridor; energy utility expansion is currently proposed for this corridor.

Some portions of the PWA are within earshot of busy roads such as Highway 2, Icicle Creek, and Highway 97 where truck traffic is easily heard.

All rivers, streams and lakes are free flowing within this PWA. Lakes in this area have been stocked with non-indigenous fish species. The roads accessing this area have established noxious weed populations. A few locations within the potential wilderness area, such as Icicle Ridge, have established populations of noxious weeds including Canada thistle and Dalmatian toadflax as well as other non-native invasive species. Dry, south facing slopes, burned areas, and dry forest types have the most potential for invasive weeds to take hold; whereas, the areas with heavy forest canopy have less potential to support weeds.

The Alpine Lakes Adjacent PWA is impaired by light pollution from the Wenatchee, Leavenworth, Cle Elum and North Bend areas. Portions of the PWA rate between a Class 3

to a Class 5 on the Bortle Scale. Class 3 accounts for 39 percent of the PWA, Class 4 accounts for 46 percent, Class 4.5 accounts for 13 percent, and Class 5 accounts for 2 percent. A Class 3 Rural Sky has some indication of light pollution on the horizon. Clouds may appear faintly illuminated in the brightest parts of the sky near the horizon, but are dark overhead. The Milky Way still appears complex. Light domes from population centers may appear on the horizon (10-15 degrees above horizon). Visual observing is still relatively unimpaired. Time lapse photography could be impaired by light pollution. A Class 4 Rural/Suburban Transition Sky exhibits fairly obvious light-pollution domes over population centers in several directions. The Milky Way, well above the horizon, is still impressive but lacks all but the most obvious structure. Clouds in the direction of light pollution sources are illuminated but only slightly so, and are still dark overhead. Modest to serious impact to deep sky observing and imaging occurs. A Class 4.5 sky portrays the Milky Way as washed out but still visible on the horizon. Light domes from populated areas are up to 45 degrees above the horizon. A Class 5 Suburban Sky portrays the Milky Way as very weak or invisible near the horizon and looks washed out overhead. Light sources are evident in most if not all directions. Over most or all of the sky, clouds are noticeably brighter than the sky itself.

Water quality data is not available for most of the PWA; however, due to the relatively low level of disturbance water quality is assumed to be high. A portion of Tucquala Lake, Waptus River and Mountaineer Creek are classified by the Washington State Department of Ecology as Category 1, which means the segments met tested standards. A portion of Ingalls Creek is classified by the Washington State Department of Ecology as Category 2, waters of concern, which means there is some evidence of a water quality problem, but it does not require a water quality cleanup plan.

Level of outstanding opportunities for solitude or primitive and unconfined recreation

Opportunities for primitive recreation experiences are high in this potential wilderness area. There are excellent opportunities for big game hunting, hiking, horse packing, camping, and mountain climbing. Portions of the PWA offer excellent opportunities for rock climbing. Many popular climbing routes and climbing areas are located in the Icicle Creek and Tumwater Canyons. Portions of the area also provide for winter backcountry skiing and snowshoeing. Snowmobiles are used in some areas in the winter which diminish the setting for primitive recreation.

Most of the area is remote and would offer opportunities for solitude. However, some of the proposed area already invites crowds and use that is not wilderness dependent, such as bouldering and snowmobiling. Places with crowding and a more typical front country clientele include climbing areas near the Icicle Creek Road and near the Wenatchee River in Tumwater Canyon. Some of the system trails in this area receive moderate use, such as the Icicle Ridge Trail. Some portions of the PWA overlook developed areas such as the Icicle Valley, Leavenworth, the Wenatchee Valley, and Snoqualmie Pass. Some portions overlook areas where there has been substantial modification from timber harvest activities.

Table 2--Miles of recreation trails

Motorized Trails	Non-motorized Trails	Snowmobile Trails
0	42	0

Special Features

The Tumwater Botanical Area is partially within this potential wilderness area. The botanical area was established to protect Tweedy's lewisia *(Lewisia tweedyi),* a Wenatchee Mountains endemic species. Many rare and endemic plant species are known to occur in the PWA due to a variety of factors including varied habitat types and juxtaposition to the continental ice sheet during the last ice age. Seven additional rare species which have been surveyed within the PWA include: Thompson's pincushion (*Chaenactis thompsonii*), clustered lady's slipper (*Cypripedium fasciculatum*), Wenatchee larkspur (*Delphinium viridescens*), showy stickseek (*Hackelia venusta*), longsepal wild hollyhock (*lliamna longisepala*), strawberry saxifrage (*Saxifragopsis fragarioides*), and Seely's catchfly (*Silene seelyi*)

The Chiwaukum Creek proposed research natural area (RNA) is located within this PWA. The 1385 acre proposed RNA protects a habitat type of grand fir mixed old-growth conifer/shrub.

One known peregrine falcon eyrie is within this PWA with vast amounts of additional cliffy nesting habitat available.

These areas are within the North Cascades Grizzly Bear Recovery Zone, and in the lynx peripheral recovery area, and provide source habitat for wolverine. All of these species have very limited distribution within the region.

This PWA has high scenic value including scenic corridors viewed from the Cle Elum River valley, Icicle Creek, the Tumwater Scenic Area, and Highway 2 Scenic Byway.

A portion of the Alpine Lakes Adjacent PWA is in the Stevens Pass National Historical District. This historical district was established to preserve and interpret the early transportation history significant to the development of the Pacific Northwest.

Manageability of Boundaries

The Alpine Adjacent PWA is comprised of 17 separate blocks fringing the wilderness. Many of these blocks are within the sights and sounds of adjacent development such as highways, roads, residential areas, campgrounds, powerlines, railroads, clearcuts, and ski areas. A few of these bocks have a more remote feel, such as these situated in the upper Kachess and Cle Elum River basins, Chiwaukum Creek and basins, and a portion of Icicle Ridge.

All portions of this PWA adjoin the existing Alpine Lakes Wilderness. Some of the blocks, such as Icicle Ridge, would be easy to locate on a map and would be easier to locate on the ground than the current configuration, which follows section lines. Some portions of the boundary make small angular changes that follow property boundaries and not contours; these would be difficult to manage. Trails that begin outside wilderness and then quickly enter wilderness would result in improved wilderness management by being able to enforce wilderness regulations right from the trailhead. Conversely, the Icicle Ridge Trail

would be very challenging to manage as wilderness where it leaves Leavenworth neighborhoods and invites mountain bikes, baby strollers, and other non-wilderness uses.

In general, adding wilderness acreage increases the opportunity to use wildland fire use. In locations where the boundary does not end at a fuel break, such as ridgelines, valley bottoms, or roads, it may preclude considering wildland fire use. Some portions of the Alpine Lakes Adjacent would result in increased flexibility, and other areas would not.

AVAILABILITY FOR WILDERNESS

Recreation

The area is currently used for hiking, stock use, mountain biking, hunting, fishing, climbing, skiing, snowshoeing, and snowmobiling. Some of the trails receive high levels of use, generally in conjunction with entering wilderness, although an exception is the Icicle Ridge Trail which draws high use from adjacent neighborhoods, its close proximity to Leavenworth, and its long season of use. Some of the trails access wilderness destinations with low to moderate levels of use.

The loss of motorized and mechanized transport would not be as controversial in this area as it would other potential wilderness areas. Some local residents like to use the Fourth of July and Icicle Ridge trails for mountain biking. The connecting trails have been written up in guidebooks, but the ride is extremely challenging due to the steep topography, and better riding opportunities exist elsewhere. Popular recreation activities that would be incompatible with the wilderness setting would include marked ski trails and roadside bouldering. Many of the trails within this PWA enter wilderness after a short distance. Wilderness designation would preserve the primitive recreation opportunity on these trails.

The Alpine Lakes region attracts tourism to varying degrees. For the central Puget Sound region, Chelan and Kittitas Counties are the first stop on the dry eastside. In Leavenworth, a Bavarian theme town, tourism has successfully been promoted since the 1960s. The wide variety of available outdoor activities has long provided a strong tourism draw, particularly in the Icicle valley and at Lake Wenatchee where concentrated car camping opportunities are available. In recent years, the town has promoted the proximity to high quality outdoor recreation experiences as a reason to visit Leavenworth and the Lake Wenatchee areas. PWA-based outdoor activities most commonly promoted include hiking, mountain biking, rock climbing, and bird watching. Tourism brochures and the chamber of commerce website have featured hiking and rock climbing areas within this PWA.

The Lake Cle Elum and Kachess Lake area provide concentrated car camping in both developed and dispersed sites. Campers often go on day hikes into the Alpine Lakes Adjacent PWA as a primary purpose of their visit. PWA-based outdoor activities most commonly promoted include summer and winter hiking, horseback riding, geocaching, wildlife viewing and bird watching, fishing, mountain biking, and cross-country skiing. Tourism brochures and chamber of commerce websites have featured hiking areas within this PWA.

An extensive resort community is being developed in the Cle Elum area with a high likelihood that the residents and guests will recreate on the nearby national forest. If linked to the Washington state population as a whole (IAC SCORP Report, 2002), recreation preferences will favor hiking and nature-based activities (53 percent and 43 percent of the population respectively). Currently, 21 percent of the population bicycles (primarily road

biking), nine percent of the population recreates with off-road vehicles, and three percent participates in equestrian activities (lumping use of developed equestrian centers and backcounty). The National Study on Recreation and the Environment (Cordell, 2004) offers a similar data set for Washington State residents age 16 and older. Of the types of use that could occur in PWAs, 47 percent of the population participates in day hiking, 45 percent visits wilderness or primitive areas, 28 percent engage in mountain biking, 22 percent go backpacking, 21 percent drive off-road, 7 percent horseback ride on trails, and 6 percent go snowmobiling.

All of these activities are on a growth trend and recreational supply both on and off National Forest System lands is limited. Providing a variety of settings for recreational experiences will continue to compliment the tourism marketing strategies of these communities. If this area is designated as wilderness, it is anticipated that visitation is likely to increase due to probable increase in media publicity for certain areas of the PWA.

Wildlife

Wildlife species such as elk, mule deer, and black bear are found in this area, as well as mountain goats within some portions. Blue grouse and ruffed grouse are among the game birds found. Northern spotted owl nesting habitat is within this area.

The area contains habitat for federally listed Canada lynx, gray wolf, grizzly bear, and northern spotted owl. The Canada lynx, gray wolf, and grizzly bear use a variety of successional stages across the landscape as their habitat, while the spotted owl primarily uses late-successional forests. Portions of the PWA are inside designated critical habitat for the northern spotted owl, as well as late-successional reserves allocated by the Northwest Forest Plan (NWFP). The Endangered Species Act (ESA) requires the Forest Service to manage for the recovery of threatened and endangered species and the ecosystems upon which they depend. Forest Service Manual (FSM) direction provides additional guidance: identify and prescribe measures to prevent adverse modifications or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species (FSM 2670.31 (6)).

The NWFP, which adopted coordinated management direction for federal lands, represents the only existing management plan that addresses the conservation of the spotted owl across its entire range. The NWFP was developed using conservation principles similar to those used to designate critical habitat. Specifically, late-successional reserves (LSRs) were designated to provide large blocks of suitable habitat capable of supporting multiple pairs of spotted owls. Standards and guidelines of the NWFP provide for the expectation that LSRs will be managed to protect and enhance late-successional and old-growth forest ecosystems. The overlap between critical habitat units (CHU) and LSR is approximately 70 percent on the Okanogan-Wenatchee National Forest. Providing connectivity among spotted owl populations may be the most important ongoing function of critical habitat, especially in areas where the risk of habitat loss from wildland fire is high. To maintain old-growth/late-successional habitat structure, recommendations from the LSR assessments include suppressing wildfire at minimum acreage, while wilderness goals would be to mimic natural processes and allow wildfire to burn.

Each PWA provides varying levels of habitat for focal wildlife species. To help evaluate habitat this area provides, the following information was provided: the focal species emphasized in the area, the amount of habitat for each focal species, the priority ranking

for the habitat (based on conservation assessments and recovery plans), and the proportion of the total habitat available on the Forest that is within the PWA.

Table 3--Availability of habitat for federally listed threatened and endangered wildlife species and R6 focal species

Wildlife Species	Acres Habitat	Habitat Priority Ranking (1=high, 2-mod, 3=low)	Percent Total Forest Habitat In Evaluation Area
Grizzly Bear	55,855	1	5
Canada Lynx	2,239	3	3
Wolverine	37,111	1	3
American marten	8,521	1	2

A key issue relative to the sustainability of wildlife habitats is the identification of the amount of dry forest that is in a late-successional habitat area (LSHA). LSHAs that occur in dry forests can be at high risk of high severity wildfire, and insects and disease that reduce the sustainability of the late-successional habitats. Active management such as prescribed fire and thinning may be needed to restore these habitats and enhance their sustainability.

Table 4--Acres of dry forest habitats that are present within the evaluation area and also within a late-successional habitat area

Late-Successional Habitat Area	Acres of Dry Forest
Icicle	Limited acres in dry forest

Water and Fish

The proposed Alpine Lakes Adjacent PWA is composed of several pieces of land on the outskirts of the Alpine Lakes Wilderness Area. Lands in this PWA are located in two upper Columbia River subbasins; the Yakima and the Wenatchee (4th HUC).

The proposed PWA occurs in the following ten subwatersheds (6th field Hydrologic Unit Code):

- Upper Nason Creek, 4,887 acres or 11 percent of the 45,588-acre subwatershed
- Lower Nason Creek, 998 acres or 4 percent of the 22,531-acre subwatershed
- Tumwater Creek, 7,743 acres or 16 percent of the 49,291-acre subwatershed
- Chiwaukum Creek, 773 acres, or 2 percent of the 32,842-acre subwatershed
- Upper Icicle Creek, 653 acres, or 1 percent of the 72,158-acre subwatershed
- Lower Icicle Creek, 20,304 acres, or 31 percent of the 65,028-acre subwatershed
- Ingalls Creek, 2,562 acres, or 5 percent of the acre 47,977-subwatershed
- Upper Cle Elum Creek, 12,586 acres, or 13 percent of 97,597-acre subwatershed
- Headwaters of the Yakima River, 712 acres, or 1 percent of the 74,572-acre subwatershed
- Kachess River, 4,647 acres, or 11 percent of the 41,094-acre subwatershed.

In these ten watersheds, the U.S. Forest Service manages the following percentage in each subwatershed: upper Nason Creek (95 percent); lower Nason Creek (47 percent);

Tumwater (82 percent); Chiwaukum Creek (90 percent); upper Icicle Creek (100 percent); lower Icicle Creek (91 percent); Ingalls Creek (73 percent); upper Cle Elum River (99 percent); headwaters of the Yakima River (58 percent); and Kachess River (75 percent).

All but the upper Cle Elum, headwaters of the Yakima, and Kachess River subwatersheds (6^{th} HUC) occur in the Wenatchee subbasin (4^{th} HUC). Subwatershed conditions are discussed by subwatershed in the following text.

Stream reach conditions in the upper Icicle subwatershed that respond to natural and human caused disturbances were evaluated as fair because collected stream data values were lower than expected values measured in high functioning stream habitat elsewhere on the Okanogan-Wenatchee National Forest. Subwatershed vegetation conditions match expected natural forest conditions; analyzed road effects were low. Vegetation condition and road effects considered cumulatively were rated good. When vegetation condition and road effects were combined with measured stream responses to summarize overall subwatershed condition, upper Icicle subwatershed was rated fair.

Stream reach conditions in the upper Cle Elum, Kachess, Ingalls and upper Nason subwatersheds that respond to natural and human-caused disturbances were evaluated as fair because collected stream data values were lower than expected values measured in high functioning stream habitat elsewhere on the Okanogan-Wenatchee National Forest. Subwatershed vegetation conditions were somewhat altered from expected natural forest conditions; analyzed road effects were moderate. Vegetation condition and road effects considered cumulatively were rated fair. When vegetation condition and road effects were combined with measured stream responses to summarize overall subwatershed conditions, these subwatersheds were rated fair.

When compared against unmodified subwatersheds in good condition on the Okanogan-Wenatchee National Forest, some vegetation condition has changed from expected condition and road density is moderate for lower Icicle and Chiwaukum subwatersheds. Considering changes in vegetation and road density in combination, these subwatersheds were rated fair. Stream reach data has not been collected in sufficient quantity for analysis; therefore watershed conditions for these two subwatersheds have not been evaluated.

Stream reach conditions in the headwaters of the Yakima River subwatershed that respond to natural and human-caused disturbances were evaluated as fair because collected stream data values were lower than expected values measured in high functioning stream habitat elsewhere on the Okanogan-Wenatchee National Forest. Subwatershed vegetation conditions were altered from expected natural forest conditions; analyzed road effects were substantial. Vegetation condition and road effects considered cumulatively were rated poor. When vegetation condition and road effects were combined with measured stream responses to summarize overall subwatershed condition, this subwatershed was rated fair.

Stream reach conditions in the lower Nason Creek subwatershed that respond to natural and human-caused disturbances were evaluated as fair because collected stream data values were lower than expected values measured in high functioning stream habitat elsewhere on the Okanogan-Wenatchee National Forest. Subwatershed vegetation conditions were altered from expected natural forest conditions; analyzed road effects were substantial. Vegetation condition and road effects considered cumulatively were rated poor. When vegetation condition and road effects were combined with measured stream responses to summarize overall subwatershed condition, this subwatershed was rated poor.

When compared against unmodified subwatersheds in good condition on the Okanogan-Wenatchee National Forest, vegetation condition has changed substantially from expected condition and road management effects are substantial in the Tumwater subwatershed. Considering changes in vegetation and road density in combination, Tumwater subwatershed was rated poor. Stream reach data has not been collected in sufficient quantity for analysis; therefore, watershed condition and response have not been evaluated.

This roadless PWA contains the headwaters of many small streams in the Icicle, Nason, Chiwaukum, Ingalls, and Cle Elum, and Yakima River upper reaches. Westslope cutthroat, native rainbow, introduced rainbow, non-native brook trout, resident bull trout and migratory bull trout occur in this PWA; populations of genetically pure westslope cutthroat trout have been documented. Some stocking continues presently, especially in high elevation wilderness lakes next to the PWA. Westslope cutthroat and rainbow trout typically are found in two types of habitat: outlet streams where planting has occurred in source lakes upstream, and in gentle gradient reaches near valley bottoms. Listed fish (spring Chinook, steelhead, and bull trout) occur downstream in nearly all of the subwatersheds in this PWA. Habitat supporting listed spring Chinook and steelhead in both the Wenatchee and Yakima subbasins downstream of the proposed of Alpine Lakes Adjacent PWA were designated as critical habitat by the National Marine Fisheries Service in January 2006.

Much of this potential wilderness area is located above 4,500 feet in elevation where yearly precipitation is 30 inches or more per year. Ongoing studies are occurring in the upper lower Icicle to examine water storage availability and fish passage issues. In combination with high elevation lands in the adjacent Alpine Lakes Wilderness, subwatersheds in both Yakima and Wenatchee subbasins collect precipitation and provide water used in the domestic drinking supply for the town of Leavenworth, three irrigation districts in the Wenatchee, and help fill Kachess and Cle Elum Reservoirs in the Yakima subbasin. Both reservoirs supply irrigation water and influence downstream water quality and water quantity, and associated fish production in the Yakima River.

The Alpine Lakes Adjacent PWA has three water source protection areas that provide water to community water systems: Cashmere Water Department, 4,625 acres; Cle Elum Water Department, 6,094 acres; and the City of Leavenworth, 4,613 acres.

Range

This potential wilderness area has no commercial livestock grazing at present. One segment of this area, near Jim Hill Mountain, lies within the historic Whitepine Grazing Allotment, which is inactive and unstocked. Several of the segments in this potential wilderness area lie within recreation stock allotment boundaries (recreation stock allotments are not depicted in Table 5, as they are an annual approval for recreation purposes and do not fall under the commercial cattle and sheep grazing permits).

Table 5--Percentage of grazing suitability areas and current commercial allotments

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
3	0	11	0

Vegetation and Ecology

Vegetation and Fire

The Alpine Lakes Adjacent PWA includes a wide range of forest types and historic fire regimes. Dry forests are found in portions of Icicle, Allen and Hansel Creeks, and in parts of Tumwater canyon where it occurs generally below elevations of 3800 feet to 4600 feet, depending on aspect. Dry forests include forests in the ponderosa pine, Douglas-fir and dry grand fir plant associations. Historically, dry forests had a frequent, low-severity fire regime. Mesic forests (moist grand fir plant associations) are typically found at higher elevations than dry forests or on more moist and shaded aspects. Mesic forests had a mixed-severity fire regime. Cold dry forests (subalpine fir plant associations) are found at high elevation in eastern locations while moist forests (western hemlock, silver fir, and mountain hemlock series) are found at moderate to high elevations closer to the crest of the Cascade Range. Both cold dry forests and moist forests had an infrequent but high-severity fire regime.

Some portions of this potential wilderness area have been altered by historic and recent logging, fire exclusion, or recent uncharacteristic wildfire. Many dry and mesic forests are (or were prior to 1994) two to ten or more fire intervals outside their normal fire cycle and have uncharacteristically high fuel loading. Wildfires in 1994, 2001, and 2004 burned much of the forested roadless acres in both the Icicle and Tumwater Canyons. Some dry and mesic forests burned with low or mixed-severity while other dry and mesic areas burned with high-severity. Much of the area contains a significant amount of standing volume.

The Alpine Lakes Adjacent PWA exhibits four fire regimes. Dry forests are represented by Fire Regime I (typically 0-35 years, non-stand replacement fire). Uncharacteristic stand replacing large fires took place in some of these dry forests in 1994 in Tumwater and Icicle areas, and again in 2001 in the Icicle drainage. As these were stand replacement fires, they persist as Condition Class I. Those unburned areas of dry forests in Tumwater and Icicle drainages as well as other dry forest sites in Allen and Hansel Creek drainages are in Condition Classes II and III. As one heads northwest in the area, the more mesic sites with a higher component of Douglas-fir, grand fir, and western hemlock are of Fire Regime III (35-100 years, mixed severity) of Condition Classes II and III. Fire Regime IV (35 to100+ years, stand replacement fires) are particular to lodgepole pine and subalpine fir series and occur as Condition Classes I, II, and III. The fire regime with a fire return interval of plus two hundred years (Fire Regime V) occurs in the cold, moist Pacific silver fir and mountain hemlock series. These are primarily in Condition Class I. Ignitions are both human-caused and of lightning origin across this large potential wilderness area. Annual ignitions are light to moderate in frequency.

Generally, the priority for restoration treatments occurs within the wildland urban interface (WUI) or within the dry and mesic forest groups. Because WUI is almost one-half of the PWA, the prohibition on mechanical restorative treatments if designated wilderness is a concern. The concern is increased, however, by recognizing that dry and mesic forest occurs on over one third of the WUI.

The Healthy Forest Restoration Act authorizes direction to implement fuel reduction projects in the WUI. The HFRA prohibits projects in wilderness areas.

Timber Harvest Suitability

The underlying criteria for determining timber harvest suitability are found in the Forest and Rangeland Renewable Resources Planning Act of 1974, 36CFR219.12, and Forest Service Handbook 1909.12, Chapter 60.

For the Colville and Okanogan-Wenatchee National Forests, the general criteria for timber suitability that will be used for timber harvest suitability are:

- Is it forest land (10 percent crown cover minimum, productivity >20 ft^3/ac/yr).
- The area has not been withdrawn from timber harvest or production.
- Soil, slope, or other watershed conditions will not be irreversibly damaged (based on soil attributes for erosion, instability, or compaction potential, slopes >65 percent, and certain land types)
- Reforestation can be assured within five years (lack of shallow soils, low frost heave potential, low surface rock, plant community type, certain land types, and elevation <5,500 feet)
- Economic and technologic viability (<0.5 miles from existing transportation system, species value or condition, volume availability, logging systems)

In consideration of all the criteria for determining timber harvest or timber production suitability and not just the fact that harvestable species can grow at a specific location, it appears this PWA does not have conditions that pass all the criteria. The main criterion for failure is that unacceptable resource impacts would likely occur due to road construction activities. This does not preclude helicopter operations that could fly material over sensitive areas to adjacent road systems. However, in most if not all cases helicopter logging and the associated expenses (such as manual slash treatments) would not be an economically viable option.

Table 6--Stand data percentages

Suitable for Timber Harvest	Forest Groups		Wildland Urban Interface (WUI)	
0%	Parkland	11%	Total WUI	49%
	Cold Dry	7%	WUI in Dry and Mesic Forest	36%
	Cold Moist	53%		
	Mesic	9%		
	Dry	13%		
	Non-forest	7%		

Insects and Disease

The Wilderness Act of 1964 allows for the control of insects and disease, but taking such actions in wilderness is rare. Forest Service wilderness policy (Forest Service Manual 2324.11) directs the agency "to allow indigenous insect and plant diseases to play, as nearly as possible their natural ecological role". Policy also directs the agency to "protect the scientific value of observing the effect of insects and disease on ecosystems and identifying genetically resistant plant species", and finally, "to control insect and plant disease epidemics that threaten adjacent lands or resources."

A portion of this PWA is comprised of a parkland forest group and is known to support stands of whitebark pine. Due to a combination of anthropogenic causes (introduced white pine blister rust, global warming, and fire suppression leading to high severity wildfires) coupled with predation from native mountain pine beetles, whitebark pine stands are at risk across their range. These whitebark pine stands are of inherent value as a plant community, for providing important habitat for wildlife including the federally listed grizzly bear, and for their aesthetics in contributing to the social setting. Wilderness designation would limit restoration options for these stands. Manipulations would only be considered in order to protect the composite wilderness resource, and only as a last resort to preserve naturalness at the expense of trammeling.

An aerial survey of a portion of this PWA was completed in 2007 (the Icicle analysis area). The most extensive damage reported was defoliation by western spruce budworm**.** About 2,000 acres were mapped, with extensive areas around Johnny Creek and Fourth of July Creek. This is nearly twice the amount of defoliation reported in 2006, and four times the amount reported in 2005.

Two small (two acres) pockets of Douglas-firs killed by Douglas-fir beetles were mapped along Icicle Creek in the vicinity of Johnny Creek.

A few pockets of mountain pine beetle activity were mapped near the ridges. Mountain pine beetles can attack and kill many species of pines, but are most closely associated with lodgepole pine. Lodgepole pine stands that are older than 80 years, with an average dbh of eight inches or greater are highly likely to experience outbreaks. Additional risk factors are basal area over 120 square feet per acre, and low elevation. Five pockets of lodgepole pine were mapped.

Mountain pine beetle damage to whitebark pines was reported. Six pockets were mapped, totaling about 250 acres. Aerial survey has reported whitebark pine mortality in this area for at least the last four years.

Other portions of this PWA have not been analyzed recently for insects and disease.

Threatened, Endangered, and Sensitive Plant Species

There are several rare plants surveyed within the Alpine Lakes Adjacent PWA, a number of which are endemic to the Wenatchee Mountains. These include Thompson's pincushion (*Chaenactis thompsonii*), clustered lady's slipper (*Cypripedium fasciculatum*), Wenatchee larkspur (*Delphinium viridescens*), showy stickseed (*Hackelia venusta*), longsepal wild hollyhock (*lliamna longisepala*), strawberry saxifrage (*Saxifragopsis fragarioides*), and Seely's catchfly (*Silene seelyi*).

Noxious Weeds

Most of the roads accessing the Alpine Lakes Adjacent have established noxious weed populations. Limited weed control takes place on these roads and weed populations are spreading. Most of the trailheads accessing this area have established noxious weed populations which are primarily hand-pulled. A large population of Canada thistle and lesser amounts of other weeds are established where the PWA meets the wilderness boundary on the Eightmile Lake Trail. This area is hand-pulled annually. A large population of Dalmatian toadflax is established on the Icicle Ridge Trail. It is no longer treated due to limited resources and a lack of water.

Minerals and Soils

Near Stevens Pass and along Whitepine Creek this area is underlain by tonalite and granodiorite of the Stuart Batholith as well as biotite schist and amphibolite of the Chiwaukum Schist. Adjacent to Leavenworth and Icicle Creek, this area is underlain by granodiorites of the Stuart Batholith. Along the Cle Elum River, this area is underlain by tertiary sandstones and conglomerates of the Swauk Formation, volcanics associated with Mount Daniels, and serpentinized rocks of the Ingalls tectonic complex.

Though the individual sections of this potential wilderness area may be underlain by significantly different bedrock, all of the sections experienced similar glacial activity during the last ice age. As a result, common features of this area include valley side slopes steepened by glacial scour.

The sidewalls of these valleys are typically plastered with a mantle of till (remnant moraine features) that may be locally quite thick.

Till deposits on steep side slopes can be relatively unstable, and this is manifested throughout the potential wilderness area in the form of ancient landslide scarps and deposits, and colluvial debris cones and wedges at the toe of slopes. Valley bottoms are typically filled with more recent alluvium. The alluvium consists of moderately sorted sand to cobble sized sediment resulting from post glacial erosion and deposition.

Soils in the potential wilderness area generally have a low to moderate inherent soil fertility. The combination of geography, land type, soils, and precipitation leads to an inherent site productivity for wood fiber that is generally moderate, though specific areas have low site productivity.

Because of the widespread location of these parcels, their geology varies considerably. It primarily consists of Tertiary sedimentary and volcanic rocks, pre-Tertiary metamorphic rocks and granitic rocks of Mesozoic age. Based upon a mineral evaluation of the Alpine Lakes Wilderness area conducted by the U.S. Geological Survey and U.S. Bureau of Mines, the portion of the potential wilderness area that is on the Cle Elum Ranger District has a moderate to high potential for the occurrence of copper, gold, and silver resources.

A portion of the potential wilderness area lies within the Cle Elum and Mineral Creek mining districts. These mining districts have a long history of gold, silver, and copper prospecting, exploration, and to a small extent, production. The Northwest Mining Association reports that copper occurrences in the Mineral Creek drainage, iron and nickel occurrences in the Cle Elum River drainage, and copper occurrences at the historic Pickwick Mine near Van Epps Pass are potentially significant resources; however, there are currently no active mining claims covering these potential resources.

Many historic but abandoned mining claims have been located and recorded for lands lying within or immediately adjacent to this potential wilderness area--primarily on the Cle Elum Ranger District. Most of the claims where not significantly developed; a few developed into small, short lived mining operations. Currently, within the Cle Elum River drainage, no more than four or five mining claims lie within the potential wilderness area. Several more lie adjacent to the potential wilderness area. There are no mining claims on or adjacent to any of the Alpine Lakes Adjacent parcels on the Wenatchee River Ranger District.

Only a small southeast portion of this PWA has been classified “prospectively valuable” for coal and geothermal resources. However, little is known about the geothermal resource

potential, and based upon available information any coal resources would not be of commercial value.

Even though none of the area is classified prospectively valuable for oil and gas, portions of the area were encumbered by several oil and gas leases. Based upon available information, those leases were applied for in speculative response to oil and gas exploration activities being conducted on lands lying south and east of the area. All of the leases terminated prior to or during the early 1990s.

Cultural and Heritage Resources

A portion of the Alpine Lakes Adjacent PWA is in the Stevens Pass National Historical District. This historical district was established to preserve and interpret the early transportation history significant to the development of the Pacific Northwest. Wilderness designation would preclude developing on-the-ground interpretive facilities within that portion of the historical district; however, such projects are not likely within the PWA.

Few additional cultural resources are known to exist within the Alpine Lakes Adjacent PWA. Some portions of the area were in historic sheep allotments and old sheep herder camps, and water developments are still identifiable. Prehistoric American Indian sites and a historic penstock are nearby in Tumwater Canyon. Old lookout sites exist on Icicle Ridge and McCue Ridge. Icicle Ridge was also a prehistoric east to west travel corridor. An old irrigation line is near the mouth of Icicle Creek, but may have been completely destroyed in the 1994 Rat Creek Fire. A cabin that is historic but highly modified is on Wedge Mountain. Remnants of abandoned system trails are in a number of locations. Unless a site has been determined to be ineligible for the National Register, it is managed as a significant site until such a determination is made. Cultural sites are protected under various laws; however, a wilderness designation or a roadless designation would afford additional protection to cultural sites from ground disturbing activities.

Land Uses and Special Uses

The area is used by outfitters and guides under permit and the occasional authorization of a recreation group event. The Scottish Lakes High Camp operates on McCue Ridge from adjacent Longview Fibre lands, and networks of marked Nordic trails enter the potential wilderness area.

The Alpine Lakes Adjacent PWA falls entirely within lands ceded to the U.S. Government under the Yakama Treaty. Indian tribes hold rights reserved under treaty and recognized in statutes, executive orders, and policies. Generally, these included rights to fish at usual and accustomed grounds and stations, the right to hunt and gather on open and unclaimed lands, the right to erect temporary houses to cure fish, and the right to pasture horses and cattle on open and unclaimed lands.

Private Lands

Most of the large parcels in this potential wilderness area have adjoining private lands involved, such as the private lands in the Icicle canyon, along Nason Creek, and in the Cle Elum and Kachess drainages. Private timberland managers have expressed concern that wilderness designation could adversely affect the potential for fire spreading onto adjacent private land due to the fuel condition of forested stands.

NEED FOR WILDERNESS

Location and size of other wildernesses in the general vicinity, and distance from proposed area and population centers:

All of these units border the Alpine Lakes Wilderness (362,789 acres). The area is only a few miles from the boundaries of the Henry M. Jackson Wilderness (100,356 acres). The Glacier Peak Wilderness (570,573 acres) is also nearby. The area is within one to four hours driving time from population centers such as Seattle-Tacoma, Yakima, Tri-Cities, Spokane, and Wenatchee.

In ranking this PWA for its potential to provide a high quality wilderness recreation setting it ranked as high due to adjoining the Alpine Lakes Wilderness. Many trails entering the wilderness pass through this PWA enroute. Much of the area is very accessible off of highways. The PWA provides high quality scenic destinations that would attract wilderness users. In addition, interconnected trail systems would facilitate both day trips and overnight use.

Present visitor pressure on other wildernesses, and trends and changing patterns of use:

Nearby wildernesses include the Glacier Peak, Henry M. Jackson, and Alpine Lakes. These and other wildernesses throughout the state serve a growing population from both sides of the Cascade Range. Most of the users are from the greater Puget Sound area. The portions of these wildernesses with easy access to spectacular destinations receive heavy use. Elsewhere there is adequate wilderness on the east slope of the Cascade Range to absorb current and future recreation demand while maintaining moderate to low levels of use. The addition of this area to the Alpine Lakes Wilderness is not likely to increase use in most of the area because the trails already access wilderness. The exception might be the Fourth of July and Icicle Ridge Trails where use levels are currently moderate and the area would likely receive increased publicity.

Extent to which non-wilderness lands provide opportunities for unconfined outdoor recreation experiences:

Inclusion of the Alpine Lakes PWA as wilderness would enhance opportunities for unconfined outdoor recreation by preserving the primitive recreation setting, since existing trails access wilderness destinations in the Alpine Lakes Wilderness.

Nason Ridge PWA is a high quality backcountry area that provides a trail system to high lakes, ridges, and peaks. The Nason Ridge area fulfills an important niche for users that aren't wholly wilderness compliant (large groups or cyclists) but otherwise want an alpine natural environment in which to recreate. Nason Ridge generally receives moderate levels of use, with high hiker use on the popular Merritt Lake Trail.

The Heather Lake PWA lies north of the Alpine Lakes Adjacent PWA. This area is adjacent to the Henry M. Jackson Wilderness, which is accessed via the Heather Lake, Top Lake, and Minotaur Lake Trails. Heather and Minotaur Lakes receive moderately high use, and Top Lake receives light to moderate use from hikers and horse users.

To the north, the Twin Lakes PWA primarily provides access to the Glacier Peak Wilderness. The Twin Lakes Trail travels about one mile through this area before entering the Glacier Peak Wilderness. Because this trail is adjacent to the Tall Timbers Ranch it receives a high visitation rate from organized groups.

Further to the north, the Entiat-Chelan PWA provides a network of non-motorized trails, also adjoining the Glacier Peak Wilderness. Most of the non-motorized and motorized trails in this area receive less use due to the absence of lakes, but do attract light levels of use. The Carne Mountain Trail attracts high levels of use from hikers, climbers, and hunters. The motorized portion of this area attracts high use levels and is one of the more extensive motorized systems in the state.

The Teanaway PWA features an extensive trail system that is both motorized and non-motorized. Many of the trails provide access to the Alpine Lakes Wilderness. The area also has extensive winter snowmobile, ski, and snowshoe use. Snowmobile incursions into wilderness are a problem from this area. The area is characterized by dry and mesic timber types and rocky serpentine ridgelines.

The need to provide a sanctuary for those biotic species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific value or phenomena

Wildlife

The west side of the Tumwater Botanical Area is located in Alpine Lakes Adjacent PWA. This special interest area provides a sanctuary for the endemic *Lewisia tweedyi*. Many rare and endemic plant species are known to occur in the area due a variety of factors including varied habitat types and juxtaposition to the continental ice sheet during the last ice age.

This PWA lies adjacent to large blocks of protected areas and would provide additional contiguous habitat for wildlife species such as grizzly bear, gray wolf, wolverine, and American marten. Wilderness designation would also protect habitat for peregrine falcon, pileated woodpecker, goshawk, mountain goats, and northern spotted owl. The wildlife sustainability index is 68.8 (a high relative ranking) and the habitat connectivity index is 40.3 (also high relative ranking).

Fish

Several native species in the interior Columbia River Basin have demonstrated an inability to survive in less than primitive surroundings, especially the bull trout. In addition to habitat changes on National Forest System lands, other factors off forest such as hydropower generation, hatchery programs, harvest, and changing ocean conditions further challenge the persistence of some far-ranging native species. Broad-scale assessments have demonstrated a positive correlation between unroaded areas and persisting native fish stocks. Often, assessments like these don't differentiate between wilderness and roadless areas; rather they combine the two into an "unroaded" category. These assessments show current strongholds (most secure and robust populations) are dependant on wilderness and roadless areas. Some of the more resilient native fish populations in the Interior Columbia Basin are located in unroaded areas on National Forest System lands.

For the Okanogan-Wenatchee National Forest PWAs were assigned an aquatic ranking based on federally listed and sensitive fish species that are sensitive to human disturbances. A high ranking was assigned when listed fish species occur in the PWA or when ecological process including high quality water help sustain listed fish species downstream of the PWA. All other PWAs are ranked low. This PWA is assigned a high ranking based on these factors.

Rare Plant Species

An analysis was completed to prioritize which PWAs would contribute the most to providing refugia for those plant species on the species of interest/species of concern (SOI/SOC) list. The analysis ranked three factors. The first factor, the total number of sites occurring within the PWA, ranked as high for this PWA. The second factor, which also ranked as high for this PWA, examined the degree of rarity of any SOI/SOC species present, and also recognized the importance of individual PWAs in supporting a high incidence of populations relative to Washington state as a whole.

PWAs are generally unsurveyed for rare plants due to a relative lack of projects occurring in these areas. Thus an additional factor examined the potential for the PWA to support SOI/SOC species. Based on databases, first the SOI/SOC plant species were identified that are present within a five-mile radius of the PWA, but are not known to occur within the PWA. Then the PWA was analyzed to see if the potential habitat for these species occurs within the PWA. Based on this analysis, this PWA ranks as high.

Finally, a composite score was assigned to each PWA based on combining each of the rankings described above. This PWA ranks overall as high priority for preserving rare plant refugia with a wilderness designation.

In particular, the Alpine Lakes Adjacent and Teanaway PWAs have the highest occurrence of endemic plant species within the entire planning area.

Ability to provide for preservation of identifiable landform types and ecosystems

This area represents the East Cascades Ecoregion as classified using Bailey's Ecoregion Classification System. This ecoregion is well represented in existing wilderness lands in the Cascade Range. An estimated 22 percent of the acreage of this PWA is in a dry and mesic forest types that are under-represented in the wilderness system.

An analysis compared vegetative cover types that are under-represented in wilderness on the National Forest System in Region 6 with those same cover types present in the PWA. Large-scale cover types were available through existing data layers and represent approximately 19 percent of the vegetative cover of this PWA (10,200 acres). These types include forb lands, non-alpine meadows, alpine meadows, and ponderosa pine. Taken as a whole, the contribution of underrepresented vegetation types ranks as moderate for the portion of this area with underrepresented cover types, but as high for the number of acres that are represented within this PWA relative to the other PWAs in the planning area (fifth highest in the planning area).

Some under-represented cover types fill microhabitats such as riparian areas or perched water tables. Such finer scale cover types represented in this PWA include sparse amounts of cottonwood, red alder, and quaking aspen.

In particular, the forb land, alpine meadow, non-alpine meadow, and ponderosa pine cover types would make a significant contribution within the eastern Washington planning area.